APPENDIX C

Soil Confirmation Samples – Data Validation Report

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Haley & Aldrich, Inc.
9040 Friars Road, Suite 220
San Diego, CA 92108
ATTN: Ms. Beth Breitenbach

February 18, 2004
Revised

SUBJECT: Boeing C-6 Facility, Data Validation

Dear Ms. Breitenbach,

Enclosed is the final validation report for the fraction listed below. This SDG was received on February 4, 2004. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 11521:

SDG #	Fraction
E4A190151	Arsenic

The data validation was performed under Tier 1, Tier 2 and Tier 3 guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, February 1994
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely,

Steven A. Ziliak
Senior Chemist

11521COV.wpd

Attachment 1

LDC #11521 (Haley & Aldrich, Inc.-San Diego / Boeing C-6 Facility)

LDC	SDG#	DATE REC'D	DATE DUE	As (6010B)																													
Matrix: Water/Soil				W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S	W	S
A	E4A190151	2-4-04	2-26-04	0	4	Tier 2																											
A	E4A190151	2-4-04	2-26-04	0	1	Tier 3																											
A	E4A190151	2-4-04	2-26-04	0	6	Tier 1																											
Total	TH			4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Shaded cells indicate Tier III validation (all other cells are Tier II validation). Sample counts do not include MS, MSD, or DUP's.

11521ST.wpd

Boeing C-6 Facility
Data Validation Reports
LDC# 11521

Arsenic

Laboratory Data Consultants, Inc.
Data Validation Report

Project/Site Name: Boeing Building C-6

Collection Date: January 19, 2004

LDC Report Date: February 18, 2004

Matrix: Soil

Parameters: Arsenic

Validation Level: Tier 1, Tier 2, & Tier 3

Laboratory: Severn Trent Laboratories

Sample Delivery Group (SDG): E4A190151

Sample Identification

CSA019_SSF05_0003*
CSA020_SSWW02_0003*
CSA021_SSWW02_0004*
CSA022_SSSF05_0004**
CSA023_SSEW02_0005*
CSA024_SSEW02_0006*
CSA025_SSF05_0005*
CSA026_SSWW02_0005
CSA027_SSEW02_0007
CSA028_SSF05_0006
CSA029_SSWW02_0006
CSA019_SSF05_0003MS
CSA019_SSF05_0003MSD

*Indicates sample underwent a Tier 1 review
**Indicates sample underwent a Tier 3 review
All others samples underwent a Tier 2 review

Introduction

This data review covers 13 soil samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA SW 846 Method 6010B for Arsenic.

This review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the method stated above.

A table summarizing all data qualification flags is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from specified protocols or is of technical advisory nature.

Blanks are summarized in Section III.

Field duplicates are summarized in Section XIII.

Samples indicated by a double asterisk on the front cover underwent a Tier 3 review. A Tier 2 review was performed on all of the other samples. Raw data were not evaluated for the samples reviewed by Tier 2 or Tier 1 criteria since this review is based on QC data.

The following are definitions of the data qualifiers:

U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.

J Indicates an estimated value.

R Quality control indicates the data is not usable.

N Presumptive evidence of presence of the constituent.

UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.

A Indicates the finding is based upon technical validation criteria.

P Indicates the finding is related to a protocol/contractual deviation.

None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

An initial calibration was performed.

The frequency and analysis criteria of the initial calibration verification (ICV) and continuing calibration verification (CCV) were met.

III. Blanks

Method blanks were reviewed for each matrix as applicable.

Data qualification by the initial, continuing and preparation blanks (ICB/CCB/PBs) was based on the maximum contaminant concentration in the ICB/CCB/PBs in the analysis of each analyte. No contaminant concentrations were found in the initial, continuing and preparation blanks.

IV. ICP Interference Check Sample (ICS) Analysis

The frequency of analysis was met.

The criteria for analysis were met.

V. Matrix Spike Analysis

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VI. Duplicate Sample Analysis

The laboratory has indicated that there were no duplicate (DUP) analyses specified for the samples in this SDG, and therefore duplicate analyses were not performed for this SDG.

VII. Laboratory Control Samples (LCS)

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) were within QC limits.

VIII. Internal Standards

ICP-MS was not utilized in this SDG.

IX. Furnace Atomic Absorption QC

Graphite furnace atomic absorption was not utilized in this SDG.

X. ICP Serial Dilution

ICP serial dilution was not required by the method.

XI. Sample Result Verification

The system performance was within validation criteria for samples on which a Tier 3 review was performed. Raw data were not evaluated for the samples reviewed by Tier 2 or Tier 1 criteria.

Sample results were reported on a wet weight basis.

XII. Overall Assessment of Data

Data flags have been summarized at the end of this report.

XIII. Field Duplicates

No field duplicates were identified in this SDG.

XIV. Field Blanks

No field blanks were identified in this SDG.

Boeing Building C-6
Arsenic - Data Qualification Summary - SDG E4A190151

No Sample Data Qualified in this SDG

Boeing Building C-6
Arsenic - Laboratory Blank Data Qualification Summary - SDG E4A190151

No Sample Data Qualified in this SDG

HALEY & ALDRICH INC

Client Sample ID: CSA019_SSF05_0003

TOTAL Metals

Lot-Sample #...: E4A190151-001 Matrix.....: SO
Date Sampled...: 01/19/04 13:45 Date Received..: 01/19/04 17:20

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4020582						
Arsenic	44.5	1.0	mg/kg	SW846 6010B	01/19-01/20/04	F772N1AA
		Dilution Factor: 1		Analysis Time..: 12:36	Analyst ID.....: 021088	
		Instrument ID..: M01		MS Run #.....: 4020282	MDL.....: 0.40	

1/21/04

HALEY & ALDRICH INC

Client Sample ID: CSA020_SSWW02_0003

TOTAL Metals

Lot-Sample #...: E4A190151-002 Matrix.....: SO
Date Sampled...: 01/19/04 14:00 Date Received..: 01/19/04 17:20

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4020582						
Arsenic	4.2	1.0	mg/kg	SW846 6010B	01/19-01/20/04	F772P1AA
		Dilution Factor: 1		Analysis Time..: 13:05	Analyst ID.....: 021088	
		Instrument ID..: M01		MS Run #.....: 4020282	MDL.....: 0.40	

1/21/04

HALEY & ALDRICH INC

Client Sample ID: CSA021_SSWW02_0004

TOTAL Metals

Lot-Sample #...: E4A190151-003 Matrix.....: SO
Date Sampled...: 01/19/04 14:15 Date Received..: 01/19/04 17:20

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4020582						
Arsenic	9.0	1.0	mg/kg	SW846 6010B	01/19-01/20/04	F772Q1AA
		Dilution Factor: 1		Analysis Time..: 13:13	Analyst ID.....: 021088	
		Instrument ID..: M01		MS Run #.....: 4020282	MDL.....: 0.40	

1/21/04

HALEY & ALDRICH INC

Client Sample ID: CSA022_SSF05_0004

TOTAL Metals

Lot-Sample #...: E4A190151-004 **Matrix.....:** SO
Date Sampled...: 01/19/04 14:30 **Date Received..:** 01/19/04 17:20

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4020582						
Arsenic	5.6	1.0	mg/kg	SW846 6010B	01/19-01/20/04	F772R1AA
		Dilution Factor: 1		Analysis Time..: 13:20	Analyst ID.....: 021088	
		Instrument ID..: M01		MS Run #.....: 4020282	MDL.....: 0.40	

1/20/04

HALEY & ALDRICH INC

Client Sample ID: CSA023_SSEW02_0005

TOTAL Metals

Lot-Sample #...: E4A190151-005 Matrix.....: SO
Date Sampled...: 01/19/04 15:30 Date Received..: 01/19/04 17:20

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4020582						
Arsenic	2.9	1.0	mg/kg	SW846 6010B	01/19-01/20/04	F772T1AA
		Dilution Factor: 1		Analysis Time..: 13:28	Analyst ID.....: 021088	
		Instrument ID..: M01		MS Run #.....: 4020282	MDL.....: 0.40	

1/21/04

HALEY & ALDRICH INC

Client Sample ID: CSA024_SSEW02_0006

TOTAL Metals

Lot-Sample #...: E4A190151-006 Matrix.....: SO
Date Sampled...: 01/19/04 15:55 Date Received..: 01/19/04 17:20

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4020582						
Arsenic	3.0	1.0	mg/kg	SW846 6010B	01/19-01/20/04	F772V1AA
		Dilution Factor: 1		Analysis Time..: 13:48	Analyst ID.....: 021088	
		Instrument ID..: M01		MS Run #.....: 4020282	MDL.....: 0.40	

1/21/04

HALEY & ALDRICH INC

Client Sample ID: CSA025_SSF05_0005

TOTAL Metals

Lot-Sample #...: E4A190151-007 **Matrix.....:** SO
Date Sampled...: 01/19/04 16:00 **Date Received..:** 01/19/04 17:20

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4020582						
Arsenic	4.5	1.0	mg/kg	SW846 6010B	01/19-01/20/04	F772W1AA
		Dilution Factor: 1		Analysis Time..: 13:56	Analyst ID.....: 021088	
		Instrument ID..: M01		MS Run #.....: 4020282	MDL.....: 0.40	

1/21/04

HALEY & ALDRICH INC

Client Sample ID: CSA026_SSWW02_0005

TOTAL Metals

Lot-Sample #...: E4A190151-008 Matrix.....: SO
Date Sampled...: 01/19/04 16:05 Date Received..: 01/19/04 17:20

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4020582						
Arsenic	19.0	1.0	mg/kg	SW846 6010B	01/19-01/20/04	F772X1AA
		Dilution Factor: 1		Analysis Time..: 14:03	Analyst ID.....: 021088	
		Instrument ID..: M01		MS Run #.....: 4020282	MDL.....: 0.40	

1/21/04

HALEY & ALDRICH INC

Client Sample ID: CSA027_SSEW02_0007

TOTAL Metals

Lot-Sample #...: E4A190151-009 Matrix.....: SO
Date Sampled...: 01/19/04 16:05 Date Received..: 01/19/04 17:20

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4020582						
Arsenic	3.7	1.0	mg/kg	SW846 6010B	01/19-01/20/04	F77201AA
		Dilution Factor: 1		Analysis Time..: 14:11	Analyst ID.....: 021088	
		Instrument ID..: M01		MS Run #.....: 4020282	MDL.....: 0.40	

1/21/04

HALEY & ALDRICH INC

Client Sample ID: CSA028_SSF05_0006

TOTAL Metals

Lot-Sample #...: E4A190151-010 Matrix.....: SO
Date Sampled...: 01/19/04 16:10 Date Received..: 01/19/04 17:20

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4020582						
Arsenic	3.0	1.0	mg/kg	SW846 6010B	01/19-01/20/04	F77211AA
		Dilution Factor: 1		Analysis Time..: 14:18	Analyst ID.....: 021088	
		Instrument ID..: M01		MS Run #.....: 4020282	MDL.....: 0.40	

1/21/04

HALEY & ALDRICH INC

Client Sample ID: CSA029_SSWW02_0006

TOTAL Metals

Lot-Sample #...: E4A190151-011 Matrix.....: SO
Date Sampled...: 01/19/04 16:15 Date Received..: 01/19/04 17:20

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	WORK ORDER #
Prep Batch #...: 4020582						
Arsenic	8.7	1.0	mg/kg	SW846 6010B	01/19-01/20/04	F77221AA
		Dilution Factor: 1		Analysis Time..: 14:26	Analyst ID.....: 021088	
		Instrument ID..: M01		MS Run #.....: 4020282	MDL.....: 0.40	

LDC #: 11521A4 **VALIDATION COMPLETENESS WORKSHEET** Date: 2-17-04

SDG #: ~~EA4190151~~ E4A190151 EPA Region 1 - Tier I/II/III Page: 1 of 1

Laboratory: Severn Trent Laboratories, Inc. Reviewer: MG

2nd Reviewer: MM

METHOD: Arsenic (EPA SW 846 Method 6010B)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1-19-04
II.	Calibration	A	
III.	Blanks	A	
IV.	ICP Interference Check Sample (ICS) Analysis	A	
V.	Matrix Spike Analysis	A	MS/MSD
VI.	Duplicate Sample Analysis	N	
VII.	Laboratory Control Samples (LCS)	A	LCS
VIII.	Internal Standard (ICP-MS)	N	Not utilized
IX.	Furnace Atomic Absorption QC	N	" "
X.	ICP Serial Dilution	N	Not required
XI.	Sample Result Verification	SW	Not reviewed for Tier II validation.
XII.	Overall Assessment of Data	A	
XIII.	Field Duplicates	N	
XIV.	Field Blanks	N	

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank

Validated Samples: ** Indicates sample underwent Tier III validation. * Indicates sample underwent Tier I validation.

all Soil

1	CSA019_SSF05_0003*	11	CSA029_SSWW02_0006	21		31	
2	CSA020_SSWW02_0003*	12	CSA019_SSF05_0003MS	22		32	
3	CSA021_SSWW02_0004*	13	CSA019_SSF05_0003MSD	23		33	
4	CSA022_SSSF05_0004**	14	PBS	24		34	
5	CSA023_SSEW02_0005*	15		25		35	
6	CSA024_SSEW02_0006*	16		26		36	
7	CSA025_SSF05_0005*	17		27		37	
8	CSA026_SSWW02_0005	18		28		38	
9	CSA027_SSEW02_0007	19		29		39	
10	CSA028_SSF05_0006	20		30		40	

Notes: Samples with no asterisk are Tier II.

LDC #: 11521A4
SDG #: ~~EA4190151~~
E4A190151

VALIDATION FINDINGS CHECKLIST

Reviewer: MG
2nd Reviewer: MM

Method: Metals (EPA SW 826 Method 6010/7000/6020)

Validation Area	Yes	No	NA	Findings/Comments
I. Technical holding times				
All technical holding times were met.	✓			
Cooler temperature criteria was met.	✓			
II. Calibration				
Were all instruments calibrated daily, each set-up time?	✓			
Were the proper number of standards used?	✓			
Were all initial and continuing calibration verification %Rs within the 90-110% (80-120% for mercury and 85-115% for cyanide) QC limits?	✓			
Were all initial calibration correlation coefficients ≥ 0.995?	✓			
Was a midrange cyanide standard distilled?			✓	
III. Blanks				
Was a method blank associated with every sample in this SDG?	✓			
Was there contamination in the method blanks? If yes, please see the Blanks validation completeness worksheet.		✓		
IV. ICP Interference Check Sample				
Were ICP interference check samples performed daily?	✓			
Were the AB solution percent recoveries (%R) with the 80-120% QC limits?	✓			
V. Matrix spike/Matrix spike duplicates				
Were a matrix spike (MS) and duplicate (DUP) analyzed for each matrix in this SDG? If no, indicate which matrix does not have an associated MS/MSD or MS/DUP. Soil / Water.	✓			
Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the 75-125 QC limits? If the sample concentration exceeded the spike concentration by a factor of 4 or more, no action was taken.	✓			
Were the MS/MSD or duplicate relative percent differences (RPD) ≤ 20% for waters and < 35% for soil samples? A control limit of +/- RL(+/-2X RL for soil) was used for samples that were ≤ 5X the RL, including when only one of the duplicate sample values were ≤ 5X the RL.	✓			
VI. Laboratory control samples				
Was an LCS anaylzed for this SDG?	✓			
Was an LCS analyzed per extraction batch?	✓			
Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the 80-120% QC limits for water samples and laboratory established QC limits for soils?	✓			
VII. Furnace Atomic Absorption QC				
If MSA was performed, was the correlation coefficients ≥ 0.995?			✓	
Do all applicable analysies have duplicate injections?			✓	

LDC #: 11521A46
SDG #: ~~EA4190151~~ E4A190151

VALIDATION FINDINGS CHECKLIST

Page: 2 of 2
Reviewer: MG
2nd Reviewer: MG

Validation Area	Yes	No	NA	Findings/Comments
For sample concentrations > RL, are applicable duplicate injection RSD values < 20%?			✓	
Were analytical spike recoveries within the 85-115% QC limits?			✓	
VIII. ICP serial dilution				
Was an ICP serial dilution analyzed if analyte concentrations were > 50X the IDL?		✓		
Were all percent differences (%Ds) ≤ 10%?			✓	
Was there evidence of negative interference? If yes, professional judgement will be used to qualify the data.			✓	
IX. Internal Standards (EPA SW-846 Method 6020)				
Were all the percent recoveries (%R) within the 30-120% of the intensity of the internal standard in the associated initial calibration?			✓	
If the %Rs were outside the criteria, was a reanalysis performed?			✓	
X. Performance Evaluation Samples (PE)				
Were performance evaluation (PE) samples performed?		✓		
Were the performance evaluation (PE) samples within the acceptance limits?			✓	
XI. Sample Result Verification				
Were RLs adjusted to reflect all sample dilutions and dry weight factors applicable to level IV validation?		✓		
XII. Overall assessment of data				
Overall assessment of data was found to be acceptable.	✓			
XIII. Field duplicates				
Field duplicate pairs were identified in this SDG.		✓		
Target analytes were detected in the field duplicates.			✓	
XIV. Field blanks				
Field blanks were identified in this SDG.		✓		
Target analytes were detected in the field blanks.			✓	

LDC #: 11521A4
SDG #: E4A19015

VALIDATION FINDINGS WORKSHEET
Sample Result Verification

Reviewer: MG
2nd Reviewer MY

METHOD: Trace metals (EPA SW-846 6010/7000)

#	Sample ID	Analyte	Result (units)	RL (units)	Finding	Qualifications
1	all	As			Results are reported on a wet weight basis	text

Comments:

LDC #: 11521A4
SDG #: E4A190151

VALIDATION FINDINGS WORKSHEET
Initial and Continuing Calibration Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd Reviewer: MY

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

An initial and continuing calibration verification percent recovery (%R) was recalculated for each type of analysis using the following formula:

%R = Found x 100 / True

Where, Found = concentration (in ug/L) of each analyte measured in the analysis of the ICV or CCV solution
True = concentration (in ug/L) of each analyte in the ICV or CCV source

Standard ID	Type of Analysis	Element	Found (ug/L)	True (ug/L)	Recalculated %R	Reported %R	Acceptable (Y/N)
0948 ICV	ICP (Initial calibration)	As	1017.2	1000	102	not reported	Y
	GFAA (Initial calibration)						
	CVAA (Initial calibration)						
1209 CCV	ICP (Continuing calibration)	As	509.51	500	102	↓	↓
	GFAA (Continuing calibration)						
	CVAA (Continuing calibration)						
	Cyanide (Initial calibration)						
	Cyanide (Continuing calibration)						

Comments: Refer to Calibration Verification findings worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

CALCLC.4SW

LDC #: 11521A4
SDG #: ~~E4A190151~~
E4A190151

VALIDATION FINDINGS WORKSHEET
Level IV Recalculation Worksheet

Reviewer: MG
2nd Reviewer: MG

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Percent recoveries (%R) for an ICP interference check sample, a laboratory control sample and a matrix spike sample were recaluculated using the following formula:

$\%R = \frac{Found}{True} \times 100$

Where, Found = Concentration of each analyte measured in the analysis of the sample. For the matrix spike calculation, Found = SSR (spiked sample result) - SR (sample result).
True = Concentration of each analyte in the source.

A sample and duplicate relative percent difference (RPD) was recalculated using the following formula:

$RPD = \frac{|S-D|}{(S+D)/2} \times 100$

Where, S = Original sample concentration
D = Duplicate sample concentration

An ICP serial dilution percent difference (%D) was recalculated using the following formula:

$\%D = \frac{|I-SDR|}{I} \times 100$

Where, I = Initial Sample Result (mg/L)
SDR = Serial Dilution Result (mg/L) (Instrument Reading x 5)

Sample ID	Type of Analysis	Element	Found / S / I (units)	True / D / SDR (units)	Recalculated %R / RPD / %D	Reported %R / RPD / %D	Acceptable (Y/N)
1009 ICSAB	ICP interference check	As	1068.9 (ug/L)	1000 (ug/L)	107	not reported	Y
LCS	Laboratory control sample	As	217 (mg/kg)	200 (mg/kg)	108	109	↓
12	Matrix spike	As	(SSR-SR) 192.6 (mg/kg)	200 (mg/kg)	96	96	↓
12/13	Duplicate	As	237 (mg/kg)	230 (mg/kg)	3.0	3.1	↓
—	ICP serial dilution	—	—	—	—	—	—

Comments: Refer to appropriate worksheet for list of qualifications and associated samples when reported results do not agree within 10.0% of the recalculated results.

LDC #: 11521A4
SDG #: ~~EA4190151~~ E4A190151

VALIDATION FINDINGS WORKSHEET
Sample Calculation Verification

Page: 1 of 1
Reviewer: MG
2nd reviewer: ~~MH~~

METHOD: Trace Metals (EPA SW 846 Method 6010/7000)

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

(Y) N N/A Have results been reported and calculated correctly?
(Y) N N/A Are results within the calibrated range of the instruments and within the linear range of the ICP?
(Y) N N/A Are all detection limits below the CRDL?

Detected analyte results for #4 As were recalculated and verified using the following equation:

Concentration = $\frac{(RD)(FV)(Dil)}{(In.\ Vol.)(\%S)}$

RD = Raw data concentration
FV = Final volume (ml)
In. Vol. = Initial volume (ml) or weight (G)
Dil = Dilution factor
%S = Decimal percent solids

Recalculation:

$$\frac{(0.05565\ mg/L)(0.100\ L)}{(0.00100\ kg)} = 5.565\ mg/kg$$

(wet weight)

Sample ID	Analyte	Reported Concentration (mg/kg)	Calculated Concentration (mg/kg)	Acceptable (Y/N)
4	As	5.6	5.6	Y

RECALC.4S2